Wyoming State Geological Survey

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Quality of life result

Wyoming natural resources are managed to maximize the economic, environmental, and social prosperity of current and future generations.

Contribution to Wyoming quality of life

Currently, the Wyoming State Geological Survey (WSGS) is continuing to accelerate its transition from a traditional, reactive state agency to a modern, dynamic, and applied organization. The agency strives to provide state decision-makers with the best science possible to ensure that energy and mineral development occurs to benefit Wyoming residents, promote economic prosperity, and protect state resources. In addition to ensuring that Wyoming has the highest quality geologic, geophysical, and geohydrologic information necessary to solve existing problems and anticipate future challenges, the WSGS collaborates closely with other state agencies, various organizations, and stakeholders to solve multidisciplinary problems. The WSGS also supplies the geologic knowledge necessary for the beneficial and responsible development of Wyoming's unconventional energy resources, including shale gas, bypassed underpressured natural gas, deep gas (more than 15,000 feet below ground), in-situ coal gasification, uranium, and liquid synfuels from oil shale and coal.

While working to increase public awareness of its contributions, the WSGS endeavors to provide Wyoming residents with the most accurate, up-to-date information on geologic hazards, natural resource and energy issues, water issues, and other geology-related topics so they can make informed decisions about issues that affect them. The WSGS aims to reduce risks associated with geologic hazards such as landslides, volcanism, earthquakes, avalanches, and floods, and is working to help modernize the Yellowstone Volcano Observatory seismic grid.

Ultimately, WSGS employees seek to establish the agency as a premier organization dedicated to applied geologic, geophysical, and geohydrologic research, such as investigating geological CO2 sequestration; developing new exploration strategies and techniques designed for Wyoming's natural resources; creating strategies to prevent or minimize waste of natural resources; constructing integrated geohydrologic models; building three-dimensional rock-fluid models of Wyoming's geologic basins; evaluating the potential for commercial metals/mineral development in Wyoming; and developing visualization techniques for a variety of geologic, geophysical, and geohydrologic processes.

Basic Facts

The WSGS has 27 employees and operated with a 2009–2010 budget of $5,304,446 in general funds. This figure includes the 10 percent reduction in the 2010 budget that resulted from the state revenue shortfall.

In the spring of 2004, State Geologist Ronald Surdam presented a new vision of a proactive, dynamic state geological survey. Because of the support subsequently provided by Governor Freudenthal and the Wyoming Legislature, much of the WSGS vision has become reality. The reorganization of the agency emphasizes teamwork between scientists with diverse interests instead of traditional sections with rigid, narrowly-defined boundaries that restrict communication. Though individuals typically cannot solve

the many complex natural resource problems facing Wyoming, focused, talented, integrated teams that bridge traditional barriers and emphasize common-sense problem solving in realistic timeframes can. The WSGS has recently acquired expertise and data in areas such as geohydrology, geophysics, and geological process modeling/visualization. Combined with existing agency talent, these new additions and organizational changes allow the WSGS to provide technology, strategies, techniques, and information to help the state address a multitude of natural resource issues.

One gauge of the success of the new WSGS program is the marked increase in augmenting funds awarded to the agency. For example, in the 2001–2002 budget period, the WSGS received $190,000 in external funding. In the 2009–2010 budget period, the agency received $1,801,810 in external funding (with $1,248,593 in ARPA and School of Energy Resources funds pending; competitive contracts will be awarded in fall 2009). Clearly, clients such as the U.S. Department of Energy, Bureau of Land Management, Wyoming Water Development Commission, Wyoming Department of Environmental Quality, and State Engineer's Office agree with the agency's new approach. It is noteworthy that all of this funding supports applied research of direct interest to the state of Wyoming.

Examples of this new approach include conducting a statewide geologic CO_2 sequestration inventory, studying coalbed methane water issues in the Powder River Basin, leading the preparation of the FutureGen proposal, developing new exploration strategies and techniques for unconventional energy resources, and launching the Granite Mountains Metals Investigation Project.

In addition, the WSGS collaborates closely with other state agencies to solve key problems. For example, projects with the DEQ (determining the remaining assimilative capacity of the Powder River Basin), SEO (modeling the potentiometric surface in the Powder River Basin), and the University of Wyoming Department of Renewable Resources (evaluating the efficacy and efficiency of low-cost mineral cation exchangers to treat CBNG produced water) have been completed. The WSGS also continues to work closely with the Water Development Commission, Oil and Gas Conservation Commission, Pipeline Authority, and Office of State Lands and Investments.

Performance

We use the metrics described below to effectively capture the agency's contribution to quality of life in Wyoming.

Effort devoted to projects that apply geologic knowledge and research to natural resource and energy issues in Wyoming. This metric has two components: percentage of WSGS projects that involve applied geologic research and address natural resource/energy issues, and percentage of WSGS employees involved in applied research/natural resource/energy projects. Including both measurements depicts both overall agency effort and collaboration between employees with different areas of expertise.

Effort devoted to collaborative projects. This metric has two components: percentage of projects that involve collaboration with other agencies and organizations, and percentage of employees involved in collaborative projects. Including both measurements depicts both overall agency effort and collaboration between employees with different areas of expertise.

Effort devoted to projects related to conventional energy resources. This metric has two components: percentage of projects related to conventional energy resources, and percentage of employees involved in projects related to conventional energy resources. Including both measurements depicts both overall agency effort and collaboration between employees with different areas of expertise.

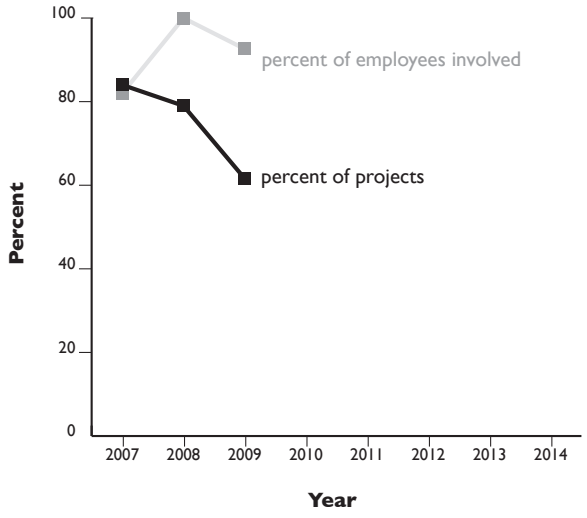
Effort devoted to projects related to unconventional energy resources. This metric has two components: percentage of projects related to unconventional energy resources, and percentage of employees involved in projects related to unconventional energy resources. Including both measurements depicts both overall agency effort and collaboration between employees with different areas of expertise.

Effort devoted to projects and activities that directly benefit the public. This metric has two components: percentage of projects that directly benefit the public,

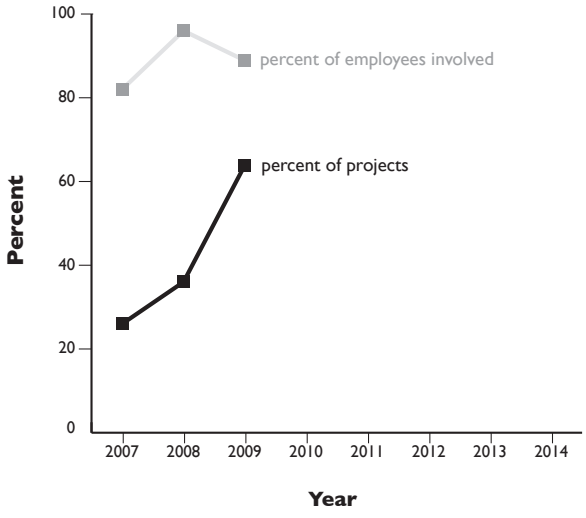
and percentage of employees involved in public outreach/educational activities, hazards-related projects, and water-related projects.

Percentage of satisfied customers. This metric depicts customer satisfaction. Because customers self-identify as industry, education, government, or general public, the agency can further explicate customer satisfaction based on affiliation. This will help monitor how well the agency serves different sectors.

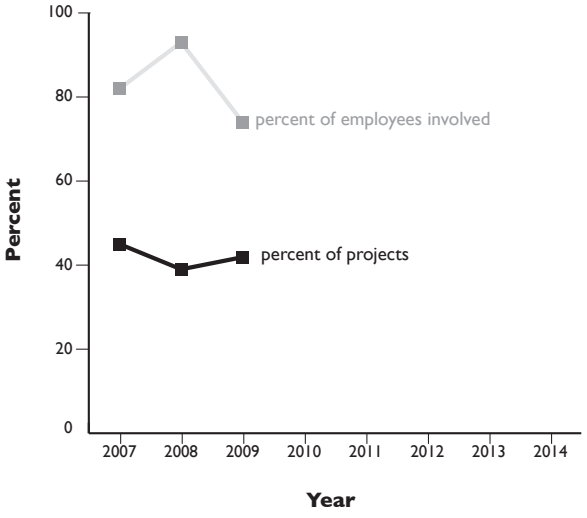
Effort devoted to projects that apply geologic knowledge to natural resource and energy issues



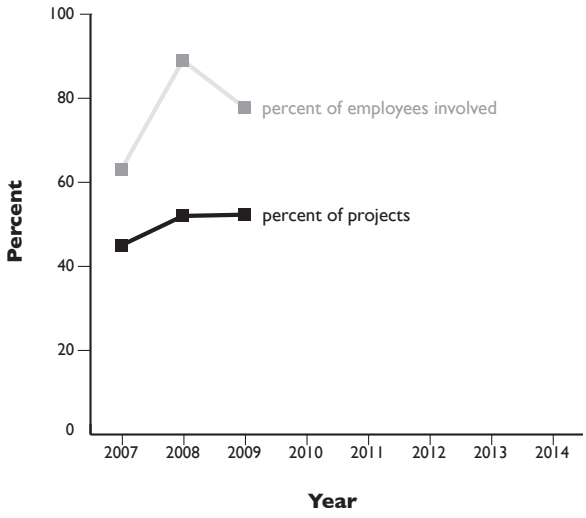
Effort devoted to collaborative projects

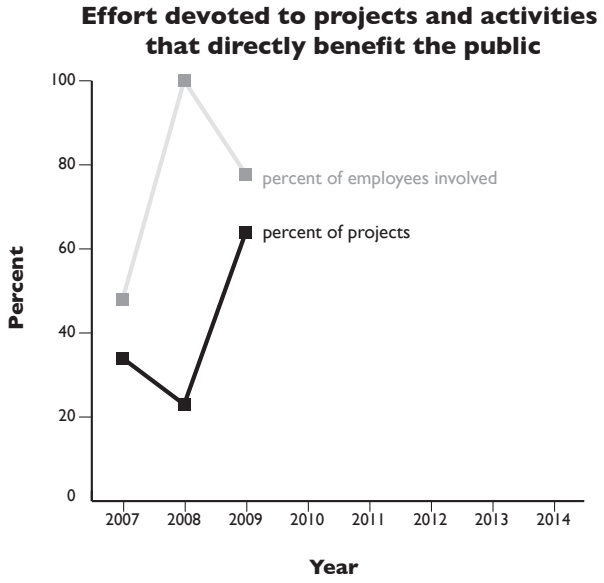


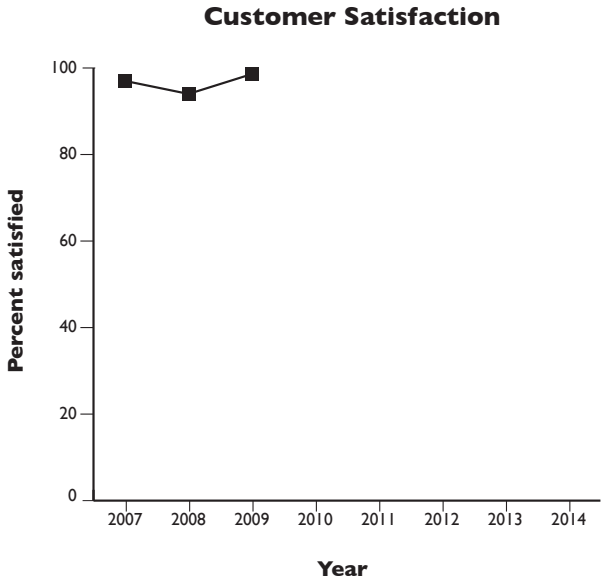
Effort devoted to projects related to conventional energy resources



Effort devoted to projects related to unconventional energy resources







Story Behind the Performance

Effort devoted to projects that apply geologic knowledge and research to natural resource and energy issues in Wyoming. By applying geologic knowledge to researching issues associated with natural resources and energy development in Wyoming, the WSGS can ensure that state policy-makers have access to the best science available. Responsible, informed development of state resources will optimize both economic prosperity and resource protection for Wyoming residents. The decline shown in the graph for this metric resulted from the fact that, this year, we chose to tally all of our mapping projects individually instead of lumping them into one generic "mapping" project. We feel that this better reflects the amount of geologic mapping the WSGS contributes. Some maps relate to energy development and some do not. Counting the maps individually resulted in an apparent artificial "decrease" in the amount of effort devoted to energy-related issues. The decline shown on the graph in no way corresponds to a decrease in emphasis on energy-related projects, just a change in project accounting.

Effort devoted to collaborative projects. Collaborating closely with other agencies and organizations allows a dynamic, multi-disciplinary approach to problem-solving. This approach ensures that the challenges facing Wyoming will be addressed by teams of experts familiar with different aspects of an issue, and facilitates creative solutions.

Effort devoted to projects related to conventional energy resources. By applying geologic knowledge to conventional energy development issues, the WSGS facilitates responsible development of state resources. Effort devoted to projects related to unconventional energy resources. By applying geologic knowledge to unconventional energy resources (clean coal technologies, shale gas, coal bed natural gas, deep gas, etc.) the WSGS can help the state develop new resources in a responsible manner and diversify its energy portfolio.

Effort devoted to projects and activities that directly benefit the public. By taking steps to educate the public about geologic, natural resource, and energy issues, the WSGS provides Wyoming residents with the information they need to make informed decisions about issues that affect them. Additionally, by working to improve understanding of geologic hazards and water issues in Wyoming, the WSGS helps protect residents from harm and maximizes beneficial use of Wyoming's water.

Percentage of satisfied customers. Working to ensure WSGS customers are satisfied with the assistance and information they receive from the agency is a top priority. Measuring customer satisfaction monitors how well the WSGS meets the needs of the public, industry, educational institutions, and other government agencies.